



office petition  
DACIA

PATENT

Attorney Docket No.: 16869B-009300US  
Client Ref. No.: HAL-ID 140

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

In re application of:

Akira Yamamoto, et al.

Application No.: 09/607,807

Filed: June 30, 2000

For: STORAGE SYSTEM  
CONNECTED TO A DATA NETWORK  
WITH DATA INTEGRITY

Customer No.: 20350

Confirmation No. 1045

Examiner: Thomson, Marc D.

Technology Center/Art Unit: 2144

PETITION TO WITHDRAW FROM  
ISSUE UNDER 37 C.F.R. §1.313(a)

Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

Sir:

Pursuant to 37 C.F.R. § 1.313(a), Applicant hereby petitions for the withdrawal of this application from issue, for consideration of an earlier-filed IDS. The issue fee for this case is due on December 10, 2004 and has not yet been paid.

An Office action was mailed February 6, 2004. A response to the Office action was mailed May 6, 2004. Submitted with that response was an IDS. Submitted herewith as Exhibit A is a copy of the IDS submission and the accompanying PTO-stamped postcard.

On September 9, 2004, a Notice of Allowance was mailed. Upon review of the file, it was realized that the references identified in the above-referenced IDS were not considered. On September 23, 2004 a request to consider that IDS was mailed. Submitted herewith as Exhibit B is a copy of the request and the accompanying PTO-stamped postcard.

A subsequent recent review of the instant application indicates that the IDS still has not been considered. Since the due date for payment of the issue fee is fast approaching, Applicant is requesting withdrawal of the instant application in order that the IDS can be properly considered.

11/25/2004 10:05:55 00000045 201430 0520/2007

01 FG:1454 130.00 03

The IDS was filed well before prosecution on the merits were closed. In addition, the PTO was timely informed that the IDS had not been considered when counsel for Applicant received the Notice of Allowance. Respectfully, the PTO therefore had and continues to have an obligation to consider the IDS. Moreover, the instant request for withdrawal from issue is believed to be necessitated by circumstances beyond control of Applicant and Applicant's counsel. Consequently, a waiver of the petition fee under C.F.R. § 1.17(h) is respectfully requested.

Authorization is nonetheless given to charge the undersigned's Deposit Account No. 20-1430 for the petition fee of \$130.00 under C.F.R. § 1.17(h) to. Please charge any additional fees or credit overpayment to the above deposit account, (see Fee Transmittal submitted in duplicate).

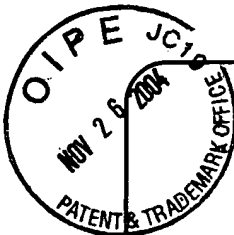
If the Examiner believes a telephone conference would expedite prosecution of this application, please telephone the undersigned at 650-326-2400.

Respectfully submitted,



George B. F. Yee  
Reg. No. 37,478

TOWNSEND and TOWNSEND and CREW LLP  
Two Embarcadero Center, Eighth Floor  
San Francisco, California 94111-3834  
Tel: 650-326-2400  
Fax: 415-576-0300  
Attachments  
GBFY:ean:cmm  
60361294 v1



PTO/SB/21 (09-04)

**TRANSMITTAL  
FORM**

(to be used for all correspondence after initial filing)

Total Number of Pages in This Submission

85

Application Number

09/607,807

Filing Date

June 30, 2000

First Named Inventor

Yamamoto, Akira

Art Unit

2144

Examiner Name

Tran, Lambert L.

Attorney Docket Number

16869B-009300US

**ENCLOSURES (Check all that apply)**

Fee Transmittal Form



Fee Attached



Amendment/Reply



After Final



Affidavits/declaration(s)



Extension of Time Request



Express Abandonment Request



Information Disclosure Statement



Certified Copy of Priority Document(s)



Reply to Missing Parts/ Incomplete Application



Reply to Missing Parts under 37 CFR 1.52 or 1.53



Drawing(s)



Licensing-related Papers



Petition



Petition to Convert to a Provisional Application



Power of Attorney, Revocation Change of Correspondence Address



Terminal Disclaimer



Request for Refund



CD, Number of CD(s) \_\_\_\_\_



Landscape Table on CD



After Allowance Communication to TC



Appeal Communication to Board of Appeals and Interferences



Appeal Communication to TC (Appeal Notice, Brief, Reply Brief)



Proprietary Information



Status Letter



Other Enclosure(s) (please identify below):

Exhibit A and B  
Return Postcard

Remarks

The Commissioner is authorized to charge any additional fees to Deposit Account 20-1430.

**SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT**

Firm Name

Townsend and Townsend and Crew LLP

Signature

Printed name

George B. F. Yee

Date

November 22, 2004

Reg. No.

37,478

**CERTIFICATE OF TRANSMISSION/MAILING**

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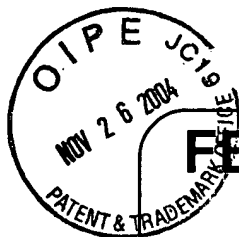
Signature

Typed or printed name

Cynthia McKinley

Date

November 22, 2004



# FEE TRANSMITTAL for FY 2005

Effective 10/01/2004. Patent fees are subject to annual revision.

☐ Applicant claims small entity status. See 37 CFR 1.27

TOTAL AMOUNT OF PAYMENT (\$) 130

## Complete if Known

Application Number	09/607,807
Filing Date	June 30, 2000
First Named Inventor	Yamamoto, Akira
Examiner Name	Tran, Lambert L.
Art Unit	2144
Attorney Docket No.	16869B-009300US

## METHOD OF PAYMENT (check all that apply)

☐ Check ☐ Credit Card ☐ Money Order ☐ Other ☐ None☒ Deposit Account:Deposit  
Account  
Number

20-1430

Deposit  
Account  
Name

Townsend and Townsend and Crew LLP

The Director is authorized to: (check all that apply)

☒ Charge fee(s) indicated below ☒ Credit any overpayments☒ Charge any additional fee(s) or any underpayment of fee(s)☐ Charge fee(s) indicated below, except for the filing fee to the above-identified deposit account.

## FEE CALCULATION

## 1. BASIC FILING FEE

Large Entity		Small Entity		Fee Description	Fee Paid
Fee Code	Fee (\$)	Fee Code	Fee (\$)		
1001	790	2001	395	Utility filing fee	
1002	350	2002	175	Design filing fee	
1003	550	2003	275	Plant filing fee	
1004	790	2004	395	Reissue filing fee	
1005	160	2005	80	Provisional filing fee	

SUBTOTAL (1)

(\$)

## 2. EXTRA CLAIM FEES FOR UTILITY AND REISSUE

Total Claims		Extra Claims		Fee from below		Fee Paid
	** =		X		=	
Independent Claims			X		=	
Multiple Dependent			X		=	

Large Entity		Small Entity		Fee Description
Fee Code	Fee (\$)	Fee Code	Fee (\$)	
1202	18	2202	9	Claims in excess of 20
1201	88	2201	44	Independent claims in excess of 3
1203	300	2203	150	Multiple dependent claim, if not paid
1204	88	2204	44	** Reissue independent claims over original patent
1205	18	2205	9	** Reissue claims in excess of 20 and over original patent

SUBTOTAL (2)

(\$)

\*\*or number previously paid, if greater; For Reissues, see above

## FEE CALCULATION (continued)

## 3. ADDITIONAL FEES

Large Entity		Small Entity		Fee Description	Fee Paid
Fee Code	Fee (\$)	Fee Code	Fee (\$)		
1051	130	2051	65	Surcharge - late filing fee or oath	
1052	50	2052	25	Surcharge - late provisional filing fee or cover sheet	
1053	130	1053	130	Non-English specification	
1812	2,520	1812	2,520	For filing a request for <i>ex parte</i> reexamination	
1804	920*	1804	920*	Requesting publication of SIR prior to Examiner action	
1805	1,840*	1805	1,840*	Requesting publication of SIR after Examiner action	
1251	110	2251	55	Extension for reply within first month	
1252	430	2252	215	Extension for reply within second month	
1253	980	2253	490	Extension for reply within third month	
1254	1,530	2254	765	Extension for reply within fourth month	
1255	2,080	2255	1,040	Extension for reply within fifth month	
1401	340	2401	170	Notice of Appeal	
1402	340	2402	170	Filing a brief in support of an appeal	
1403	300	2403	150	Request for oral hearing	
1451	1,510	1451	1,510	Petition to institute a public use proceeding	
1452	110	2452	55	Petition to revive - unavoidable	
1453	1,330	2453	665	Petition to revive - unintentional	
1501	1,370	2501	685	Utility issue fee (or reissue)	
1502	490	2502	245	Design issue fee	
1503	660	2503	330	Plant issue fee	
1460	130	1460	130	Petitions to the Commissioner	130
1807	50	1807	50	Processing fee under 37 CFR 1.17(q)	
1806	180	1806	180	Submission of Information Disclosure Stmt	
8021	40	8021	40	Recording each patent assignment per property (times number of properties)	
1809	790	2809	395	Filing a submission after final rejection (37 CFR § 1.129(a))	
1810	790	2810	395	For each additional invention to be examined (37 CFR § 1.129(b))	
1801	790	2801	395	Request for Continued Examination (RCE)	
1802	900	1802	900	Request for expedited examination of a design application	

Other fee (specify)

\*Reduced by Basic Filing Fee Paid SUBTOTAL (3)

(\$130)

## SUBMITTED BY

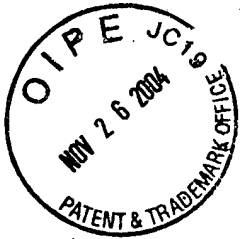
## Complete (if applicable)

Name (Print/Type)	George B. F. Yee	Registration No. (Attorney/Agent)	37,478	Telephone	650-326-2400
Signature		Date	November 22, 2004		

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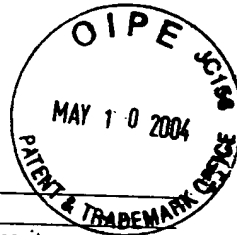


## EXHIBIT A



FILING ACKNOWLEDGMENT

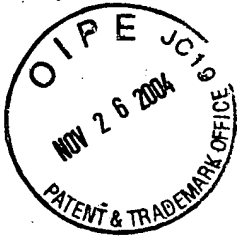
Mailing Date: 5/6/04  
File No.: 16869B-009300US Attorney: GBFY:cmm  
Inventor(s): Akira Yamamoto et al.  
Title: Storage System Connected to a Data Network with Data Integrity



Re: Application No. 09/607,807, Filed June 30, 2000

**Enclosed:** Transmittal Form, Fee Transmittal - submitted in duplicate,  
Amendment, Information Disclosure Statement, 3 cited references, and Postcard.

Please stamp the date of receipt of the enclosed documents and return this card to addressee  
60210541 v1



### FILING ACKNOWLEDGMENT

Mailing Date: 5/6/04  
File No.: 16869B-009300US Attorney: GBFY:cmm  
Inventor(s): Akira Yamamoto et al.  
Title: Storage System Connected to a Data Network with Data Integrity

Re: Application No. 09/607,807, Filed June 30, 2000

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Please stamp the date of receipt of the enclosed documents and return this card to addressee  
60210541 v1



<b>TRANSMITTAL FORM</b> <i>(to be used for all correspondence after initial filing)</i>		Application Number	09/607,807
		Filing Date	June 30, 2000
		First Named Inventor	Yamamoto, Akira
		Art Unit	2144
		Examiner Name	Tran, Lambert L.
Total Number of Pages in This Submission	** 16	Attorney Docket Number	16869B-009300US

ENCLOSURES (Check all that apply)		
<input checked="" type="checkbox"/> Fee Transmittal Form <input type="checkbox"/> Fee Attached <input checked="" type="checkbox"/> Amendment/Reply <input type="checkbox"/> After Final <input type="checkbox"/> Affidavits/declaration(s) <input type="checkbox"/> Extension of Time Request <input type="checkbox"/> Express Abandonment Request <input checked="" type="checkbox"/> Information Disclosure Statement <input type="checkbox"/> Certified Copy of Priority Document(s) <input type="checkbox"/> Response to Missing Parts/Incomplete Application <input type="checkbox"/> Response to Missing Parts under 37 CFR 1.52 or 1.53	<input type="checkbox"/> Drawing(s) <input type="checkbox"/> Licensing-related Papers <input type="checkbox"/> Petition <input type="checkbox"/> Petition to Convert to a Provisional Application <input type="checkbox"/> Power of Attorney, Revocation Change of Correspondence Address <input type="checkbox"/> Terminal Disclaimer <input type="checkbox"/> Request for Refund <input type="checkbox"/> CD, Number of CD(s)	<input type="checkbox"/> After Allowance Communication to Group <input type="checkbox"/> Appeal Communication to Board of Appeals and Interferences <input type="checkbox"/> Appeal Communication to Group (Appeal Notice, Brief, Reply Brief) <input type="checkbox"/> Proprietary Information <input type="checkbox"/> Status Letter <input checked="" type="checkbox"/> Other Enclosure(s) (please identify below): Return Postcard
Remarks		The Commissioner is authorized to charge any additional fees to Deposit Account 20-1430.
** The references cited in the IDS are not included in the total number of pages in this submission		

SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT		
Firm or Individual	Townsend and Townsend and Crew LLP Rodney C. LeRoy for George B. F. Yee (Reg. No. 37,478) Reg. No. 53,205	
Signature		
Date	May 6, 2004	

CERTIFICATE OF TRANSMISSION/MAILING			
I hereby certify that this correspondence is being facsimile transmitted to the USPTO or deposited with the United States Postal Service with sufficient postage as first class mail in an envelope addressed to: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450 on the date shown below.			
Typed or printed name	Cynthia McKinley		
Signature		Date	May 6, 2004



**FEE TRANSMITTAL  
for FY 2004**

Effective 10/01/2003. Patent fees are subject to annual revision.

☐ Applicant claims small entity status. See 37 CFR 1.27**TOTAL AMOUNT OF PAYMENT (\$)** 180**Complete if Known**

Application Number	09/607,807
Filing Date	June 30, 2000
First Named Inventor	Yamamoto, Akira
Examiner Name	Tran, Lambert L.
Art Unit	2144
Attorney Docket No.	16869B-009300US

**METHOD OF PAYMENT (check all that apply)**☐ Check ☐ Credit Card ☐ Money Order ☐ Other ☐ None☒ Deposit Account:Deposit  
Account  
Number

20-1430

Deposit  
Account  
Name

Townsend and Townsend and Crew LLP

The Director is authorized to: (check all that apply)

☒ Charge fee(s) indicated below ☒ Credit any overpayments☒ Charge any additional fee(s) or any underpayment of fee(s)☐ Charge fee(s) indicated below, except for the filing fee to the above-identified deposit account.**FEE CALCULATION****1. BASIC FILING FEE**

Large Entity		Small Entity		Fee Description	Fee Paid
Fee Code	Fee (\$)	Fee Code	Fee (\$)		
1001	770	2001	385	Utility filing fee	
1002	340	2002	170	Design filing fee	
1003	530	2003	265	Plant filing fee	
1004	770	2004	385	Reissue filing fee	
1005	160	2005	80	Provisional filing fee	
SUBTOTAL (1)					(\$)

**2. EXTRA CLAIM FEES FOR UTILITY AND REISSUE**

				<b>Extra Claims</b>	<b>Fee from below</b>	<b>Fee Paid</b>
Total Claims	<input type="text"/>	**	=	<input type="text"/>	<input type="text"/>	<input type="text"/>
Independent Claims	<input type="text"/>	**	=	<input type="text"/>	<input type="text"/>	<input type="text"/>
Multiple Dependent				X <input type="text"/>	<input type="text"/>	<input type="text"/>

Large Entity		Small Entity		<u>Fee Description</u>
Fee Code	Fee (\$)	Fee Code	Fee (\$)	
1202	18	2202	9	Claims in excess of 20
1201	86	2201	43	Independent claims in excess of 3
1203	290	2203	145	Multiple dependent claim, if not paid
1204	86	2204	43	** Reissue Independent claims over original patent
1205	18	2205	9	** Reissue claims in excess of 20 and over original patent
SUBTOTAL (2)				<input type="text"/> (\$)

\*\* or number previously paid, if greater; For Reissues, see above

**FEE CALCULATION (continued)****3. ADDITIONAL FEES**

Large Entity		Small Entity		Fee Description	Fee Paid
Fee Code	Fee (\$)	Fee Code	Fee (\$)		
1051	130	2051	65	Surcharge - late filing fee or oath	
1052	50	2052	25	Surcharge - late provisional filing fee or cover sheet	
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1252	420	2252	210	Extension for reply within second month	
1253	950	2253	475	Extension for reply within third month	
1254	1,480	2254	740	Extension for reply within fourth month	
1255	2,010	2255	1,005	Extension for reply within fifth month	
1401	330	2401	165	Notice of Appeal	
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1453	1,330	2453	665	Petition to revive - unintentional	
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1503	640	2503	320	Plant issue fee	
1460	130	1460	130	Petitions to the Commissioner	
1807	50	1807	50	Petitions related to provisional applications	
1806	180	1806	180	Submission of Information Disclosure Stmt	180
8021	40	8021	40	Recording each patent assignment per property (times number of properties)	
1809	770	2809	385	Filing a submission after final rejection (37 CFR § 1.129(a))	
1810	770	2810	385	For each additional invention to be examined (37 CFR § 1.129(b))	
1801	770	2801	385	Request for Continued Examination (RCE)	
1802	900	1802	900	Request for expedited examination of a design application	

Other fee (specify) \_\_\_\_\_

\*Reduced by Basic Filing Fee Paid SUBTOTAL (3)

(\$180)

**SUBMITTED BY****Complete (if applicable)**

Name (Print/Type)	Rodney C. LeRoy for George B. F. Yee (Reg. No. 37,478)	Registration No. (Attorney/Agent)	53,205	Telephone	650-326-2400
Signature				Date	May 6, 2004

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Commissioner for Patents  
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Alexandria, VA 22313-1450

PATENT  
Attorney Docket No.: 16869B-009300US  
Client Ref. No.: HAL-ID 140

On 5/6/04

TOWNSEND and TOWNSEND and CREW LLP

By: [Signature]

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

In re application of:

Akira Yamamoto, et al.

Application No.: 09/607,807

Filed: June 30, 2000

For: STORAGE SYSTEM  
CONNECTED TO A DATA NETWORK  
WITH DATA INTEGRITY

Customer No.: 20350

Confirmation No. 1045

Examiner: Tran, Lambert L.

Technology Center/Art Unit: 2144

AMENDMENT

Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

Sir:

In response to the Office Action mailed February 6, 2004, please enter the following amendments and remarks:

**Amendments to the Claims** are reflected in the listing of claims which begins on page 2 of this paper.

**Remarks/Arguments** begin on page 8 of this paper.

**Amendments to the Claims:**

This listing of claims will replace all prior versions, and listings of claims in the application:

**Listing of Claims:**

- 1                   1.       (Currently amended): A storage system comprising:  
2                    ~~a first computer system having a first storage component comprising a first disk~~  
3 ~~system, the first disk system comprising a first disk control unit and one or more first disk units;~~  
4 and  
5                    ~~a second computer system having a second storage component comprising a~~  
6 ~~plurality of second disk systems, each second disk system comprising a second disk control units~~  
7 ~~and one or more second disk units,~~  
8                    the first and second storage components configured to exchange data over a data  
9 network,  
10                   the first ~~computer disk~~ system having a memory that is configured with program  
11 ~~code to write a block of data to the first storage component configured to receive a block of data~~  
12 ~~from a host computer and to transmit a data packet to one of the second computer disk systems,~~  
13 the data packet including the block of data, a time stamp, and a sequence number,  
14                   ~~each of the second computer disk systems configured having a memory that is~~  
15 ~~configured with program code to receive data packets from the first computer disk system, to~~  
16 ~~receive a limit time value from a predetermined one of the second disk systems based on time~~  
17 ~~stamps and sequence numbers contained in the data packets, to select a candidate data packet~~  
18 ~~from among its received data packets by comparing their associated time stamps to the limit time~~  
19 ~~value based on time stamps and sequence numbers contained in the data packets, and to write the~~  
20 candidate data packet on ~~the one of its second disk units~~ storage system,  
21                    wherein blocks of data written on the first storage component are written on the  
22 second storage component in the same order as on the first storage component.

1                   2.       (Currently amended): The system of claim 1 wherein each of the second  
2 disk systems produces a candidate limit time, wherein the limit time value is the earliest time  
3 among the candidate limit times~~the second memory is further configured with program code to~~  
4 ~~obtain a limit time stamp from among the time stamps based on their corresponding sequence~~  
5 ~~numbers and to select the candidate data packet from among the data packets by comparing their~~  
6 ~~corresponding time stamps against the limit time stamp.~~

1                   3.       (Original): The system of claim 1 wherein the data network is a  
2 connectionless network.

1                   4.       (Original): The system of claim 1 wherein the data network is  
2 characterized as being unable to guarantee that data packets will be received in the same order as  
3 they were sent.

1                   5.       (Original): The system of claim 4 wherein the data network is a wide area  
2 network.

6 - 7. (Canceled)

1                   8.       (Currently amended): The system of claim ~~7-1~~ wherein ~~each of the first~~  
2 ~~disk systems comprises plural first disk units and each of the second disk systems comprises~~  
3 ~~plural second disk units, each of the first disk units being is associated with one of the second~~  
4 ~~disk units.~~

1                   9.       (~~Original~~Currently amended): The system of claim 8 wherein each first  
2 disk unit is associated with one of the second disk units independently of the ~~first~~second disk  
3 system to which the ~~first~~second disk unit belongs.

1           10.   (Currently amended): A method of ~~backing up data contained in operating~~  
2 a storage system that includes a local disk system to and a remote disk system, comprising:  
3           ~~writing-receiving~~ a block of data to be written to a first local disk unit among a  
4 plurality of local disk units in a local data store in the local disk system;  
5           sending a data packet to a first remote disk unit among a plurality of remote disk  
6 units in a first remote data store from among a plurality of remote data stores in the remote disk  
7 system, the data packet including the block of data, a time stamp, and a sequence number,  
8 wherein the first local disk unit and the first remote disk unit defines a remote copy pair;  
9           ~~receiving data packets from the local system; and~~  
10          in the first remote data store, performing steps of:  
11           receiving from a predetermined remote data store a limit time, the limit  
12 time being determined based on the sequence numbers and the time stamps of its data  
13 packets; and  
14           selecting a data packet whose block of data is to be written on a remote  
15 data store by comparing the time stamp of each of its data packets against the limit time,  
16 ~~based on the sequence numbers and the time stamps of the data packets.~~

1           11.   (Original): The method of claim 10 further including incrementing the  
2 sequence number for a next data packet.

12 - 13.       (Canceled)

1           14.   (Currently amended): The method of claim ~~13~~ 10 further including  
2 writing plural blocks of data to the local disk units and sending plural data packets to the remote  
3 disk units so that each remote disk unit has a list of sequence numbers from its associated plural  
4 data packets, the method further including, for each list of sequence numbers, obtaining a longest  
5 run of sequence numbers, obtaining the highest-valued sequence number from the longest run,  
6 and obtaining the time stamp corresponding to the highest-valued sequence number, thereby

7 producing a list of time stamps, the method further including selecting a data packet based on the  
8 earliest time stamp in the list of time stamps.

15 - 16. (Canceled)

1 ~~18~~17. (Renumbered, Currently amended): The method of claim ~~16~~10 wherein  
2 each of the local disk units is associated with one of the remote disk units independently of the  
3 local disk system to which the local disk unit belongs.

1 ~~19~~18. (Renumbered, Currently amended): The method of claim 10 wherein  
2 ~~writing-receiving~~ a block of data ~~to at the local disk system~~data store and sending a data packet  
3 to the remote disk system are performed asynchronously.

1 ~~20~~19. (Renumbered): The method of claim 10 wherein the data packets are sent  
2 over a connectionless data network.

1 ~~21~~20. (Renumbered): The method of claim 10 wherein the data packets are sent  
2 over a data network that is characterized as being unable to guarantee that data packets will  
3 arrive at a destination in the same order as they were sent.

1 ~~22~~21. (Renumbered, Currently amended): The method of claim ~~21~~20 wherein  
2 the data network is a wide area network.

1 ~~23~~22. (Renumbered, Currently amended): In a local storage system comprising  
2 ~~plural a~~ local data stores, a method for backing up data in the local storage system to a remote  
3 storage system comprising plural remote data stores, the method comprising:  
4 ~~each-at the~~ local data store, receiving a data block to be written thereto;  
5 ~~each-at the~~ local data store transmitting a data packet comprising the data block, a  
6 time stamp, and a sequence number to one of the remote data stores;  
7 at the remote data stores, receiving plural data packets from the local data stores,  
8 wherein each remote data store has its associated plural data packets and a list of sequence  
9 numbers and a list of time stamps from the associated data packets;

10 at each remote data store, identifying a longest run of sequence numbers and  
11 ~~obtaining the~~ an obtained data packet ~~of having~~ the highest-valued sequence number of the  
12 longest run of sequence numbers;

13 ~~at each remote data store, obtaining the earliest time stamp from the obtained data~~  
14 ~~packet;~~

15 ~~selecting the earliest of the obtained time stamps as a limit time;~~

16 at a predetermined remote data store, identifying a limit time from among time  
17 stamps associated with obtained data packets from the remote data stores;

18 at each remote data store, selecting a candidate data packet having the earliest  
19 time stamp; and

20 ~~selecting the~~ identifying a selected data packet from among the candidate data  
21 packets whose time stamp is earlier than the limit time and writing the selected data packet to  
22 one of the remote data stores.

2423. (Renumbered, Canceled)

1 2524. (Renumbered, Currently amended): The method of claim 2422 wherein  
2 ~~each the~~ local data store is ~~one of the~~ a plurality of local disk drives and each remote data store is  
3 ~~one of the~~ a plurality of remote disk drives, each local disk drive being associated with one of the  
4 remote disk drives to define a remote copy pair, wherein there is a sequence number associated  
5 with each remote copy pair.

1 2625. (Renumbered, Currently amended): The method of claim 2524 wherein  
2 the received plural data packets are grouped according to remote copy pair.

2726. (Renumbered, Canceled)

1 2827. (Renumbered, Currently amended): The method of claim 2725 wherein  
2 each of the plural data packets is grouped based on the local disk ~~system drive~~ drive from which it was  
3 sent.

- 1                    2928. (Renumbered, Currently amended): The method of claim 24 wherein each  
2 remote copy pair is associated with one of a plurality of data integrity pair groups, wherein a  
3 sequence number is associated with each pair of local and remote disk ~~systems~~ drives which  
4 have a common data integrity pair group.

3029 - 32. (Renumbered, Canceled)



**REMARKS/ARGUMENTS**

Claims 1 - 5, 8 - 11, 14, 17 - 22, 24, 25, 27, and 28 are pending.

An objection was raised as to claims 18 - 33 for being mis-numbered. Claims 18 - 33 have been renumbered as claims 17 - 32; dependent claims have been amended accordingly. Claim references are made with respect to the re-numbered claims.

Claims 1 - 32 stand rejected under 35 U.S.C. Section 103 for being obvious in view of Sicola et al., U.S. Pat. No. 6,629,264 and a reference entitled "RTP: A Transport Protocol for Real-Time Applications," RFC 1889.

The present invention relates to data replication in storage systems. As recited in claim 1, for example, the storage system includes "a first storage component comprising a first disk system, the first disk system comprising a first disk control unit and one or more first disk units [and] a second storage component comprising a plurality of second disk systems, each second disk system comprising a second disk control units and one or more second disk units." Data written to the first disk system is transmitted to each of the second disk systems as data packets, along with a "time stamp, and a sequence number." This aspect of the invention is illustrated in Fig. 4 and discussed in the specification beginning on page 12, line 19; kindly see also the top of page 13. Each of the second disk systems is configured to:

- (1) "receive data packets from the first disk system";
- (2) "to receive a limit time value from a predetermined one of the second disk systems based on time stamps and sequence numbers";
- (3) "select a candidate data packet from among its received data packets by comparing their associated time stamps to the limit time value"; and
- (4) "write the candidate data packet on one of its second disk units."

Sicola et al. teach a data replication system that "employs the grouping of logical units into 'association sets', for logging and failover purposes." *Abstract*. See generally, column 19, line 58 to column 20, line 37. In particular, Sicola et al. teach that "[a]ll members of an association set must be on the same controller to enforce cache coherency. When members are

added to an association set, they are moved to reside on the same controller, and will failover together." *Col. 20, lines 31 - 37.*

The present invention recites that each of the second disk systems [receives] data packets from the first disk system. *Claim 1.* The present invention allows data written to the first disk system to be replicated among multiple second disk systems, where each second disk system has its own controller. The multiple second disk systems of the present invention are not anticipated by the "association set" used by the data replication system of Sicola et al. because the association set requires its members to "be on the same controller," which is clearly not the case with the multiple second disk systems recited in claim 1 of the present invention.

The abstract in the RFC 1889 reference was cited for teaching "time stamp and sequence number." Section 6.3.1 in the RFC 1889 reference was also cited for teaching "limit time." Sicola et al. do not disclose either aspect of the present invention. RFC 1889 describes a real-time transport protocol (RTP) that "provides end-to-end network transport functions suitable for applications transmitting real-time data." *Abstract.* Like any communication protocol, RTP is a protocol for delivering data between two machines. However, the RTP protocol does not specify or otherwise suggest that the data might be processed within a receiving machine in a manner as recited in the pending claims.

For example, an aspect of the invention is that each second disk system [receives] a limit time value from a predetermined one of the second disk systems, where the limit time value is used in a second disk system to select a candidate data packet from among its received data packets. First, it is earnestly submitted that Section 6.3.1 of RFC 1889 does not suggest a limit time value that is used to select a candidate data packet. With all respect, it is earnestly submitted that it is not at all clear how Section 6.3.1 of RFC 1889 shows a limit time value, as asserted in paragraph 2 of the Office action. Sicola et al. teaches the use of a 'heartbeat' timer at column 9, lines 55 - 67 to send an "echo" to extend link service; i.e., to maintain the link. The Sicola et al. 'heartbeat' timer does not teach or suggest the recited limit time value used to select a candidate data packet.

Second, though the RTP protocol incorporates a sequence number and a timestamp (Section 5.1 in RFC 1889), there is no teaching or suggestion in RFC 1889 (or in

Appl. No. 09/607,807  
Amdt. sent May 6, 2004  
Reply to Office Action of February 6, 2004

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Sicola et al., for that matter) that the sequence number and the timestamp from the RTP protocol can be used to determine a limit time value (claim 1: a limit time value ... based on time stamps and sequence numbers).

For at least any one of the foregoing reasons set forth the pending claims as amended are believed to patentably distinct from the cited art.

**CONCLUSION**

In view of the foregoing, all claims now pending in this Application are believed to be in condition for allowance. The issuance of a formal Notice of Allowance at an early date is respectfully requested.

If the Examiner believes a telephone conference would expedite prosecution of this application, please telephone the undersigned at 650-326-2400.

Respectfully submitted,



Rodney C. LeRoy, Reg. No. 53,205 for  
George B. F. Yee, Reg. No. 37,478

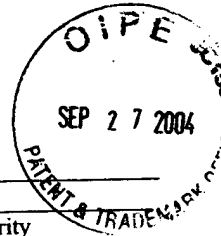
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## EXHIBIT B



FILING ACKNOWLEDGMENT



Mailing Date: 9/23/04  
File No.: 16869B-009300US Attorney: GBFY:cmm  
Inventor(s): Akira Yamamoto et al.  
Title: Storage System Connected to a Data Network with Data Integrity

Re: Application No. 09/607,807, Filed June 30, 2000

**Enclosed:** Transmittal Form, Request to Consider Information Disclosure Statement, and Postcard.

Please stamp the date of receipt of the enclosed documents and return this card to addressee  
60316466 v1



### FILING ACKNOWLEDGMENT

Mailing Date: 9/23/04

File No.: 16869B-009300US

Attorney: GBFY:cmm

Inventor(s): Akira Yamamoto et al.

Title: Storage System Connected to a Data Network with Data Integrity

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PTO/SB/21 (04-04)

**TRANSMITTAL  
FORM**

(to be used for all correspondence after initial filing)

Application Number	09/607,807
Filing Date	June 30, 2000
First Named Inventor	Yamamoto, Akira
Art Unit	2144
Examiner Name	Tran, Lambert L.
Attorney Docket Number	16869B-009300US

Total Number of Pages in This Submission

2

**ENCLOSURES (Check all that apply)**

- |  |  |   |
|--|--|---|
| <input type="checkbox"/> Fee Transmittal Form<br><input type="checkbox"/> Fee Attached<br><input type="checkbox"/> Amendment/Reply<br><input type="checkbox"/> After Final<br><input type="checkbox"/> Affidavits/declaration(s)<br><input type="checkbox"/> Extension of Time Request<br><input type="checkbox"/> Express Abandonment Request<br><input type="checkbox"/> Information Disclosure Statement<br><input type="checkbox"/> Certified Copy of Priority Document(s)<br><input type="checkbox"/> Response to Missing Parts/<br>Incomplete Application<br><input type="checkbox"/> Response to Missing Parts<br>under 37 CFR 1.52 or 1.53 | <input type="checkbox"/> Drawing(s)<br><input type="checkbox"/> Licensing-related Papers<br><input type="checkbox"/> Petition<br><input type="checkbox"/> Petition to Convert to a<br>Provisional Application<br><input type="checkbox"/> Power of Attorney, Revocation<br>Change of Correspondence Address<br><input type="checkbox"/> Terminal Disclaimer<br><input type="checkbox"/> Request for Refund<br><input type="checkbox"/> CD, Number of CD(s) | <input type="checkbox"/> After Allowance Communication<br>to Technology Center (TC)<br><input type="checkbox"/> Appeal Communication to Board<br>of Appeals and Interferences<br><input type="checkbox"/> Appeal Communication to TC<br>(Appeal Notice, Brief, Reply Brief)<br><input type="checkbox"/> Proprietary Information<br><input type="checkbox"/> Status Letter<br><input checked="" type="checkbox"/> Other Enclosure(s) (please<br>identify below):<br>Request to Consider Information Disclosure<br>Statement<br>Return Postcard |
|--|--|---|

Remarks	The Commissioner is authorized to charge any additional fees to Deposit Account 20-1430.
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**SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT**

Firm or Individual name	Townsend and Townsend and Crew LLP George B. F. Yee	Reg. No. 37,478
Signature		
Date	September 23, 2004	

**CERTIFICATE OF TRANSMISSION/MAILING**

I hereby certify that this correspondence is being deposited with the United States Postal Service with sufficient postage as first class mail in an envelope addressed to: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450 on the date shown below.

Typed or printed name	Cynthia McKinley		
Signature		Date	September 23, 2004



Attorney Docket No.: 16869B-009300US

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

In re application of:

Akira Yamamoto et al.

Application No.: 09/607,807

Filed: June 30, 2000

For: Storage System Connected to A Data  
Network with Data Integrity

Customer No.: 20350

Confirmation No. 1045

Examiner: Marc D. Thompson

Technology Center/Art Unit: 2144

**REQUEST TO CONSIDER  
INFORMATION  
DISCLOSURE STATEMENT**


Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

Sir:

During a review of the instant application in preparation for payment of the Issue Fee, it was discovered that an IDS submitted on May 6, 2004 appears not to have been considered.

Accordingly, consideration of the references cited in that IDS is respectfully requested.

Respectfully submitted,

  
George B. F. Yee  
Reg. No. 37,478

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